microscopic particles is placed between the radiation source and the processing organ, which filter comprises a plurality of foils or plates having surfaces for trapping atomic and microscopic particles thereon, wherein each foil or plate essentially points in a radial direction when viewed from the radiation source.

2. The apparatus according to claim **1**, wherein the foils or plates are positioned in a honeycomb construction.

3. The apparatus according to claim **1**, wherein the foils or plates are coneshaped and are positioned concentrically.

4. The apparatus according to claim **1**, wherein in the radial direction the foils or plates are positioned such as to be evenly distributed in relation to one another.

5. The apparatus according to claim **1**, wherein the radiation source and the processing organ are placed in a buffer gas, and wherein a distance between the radiation source and a proximal end of the filter in relation to the radiation source is selected subject to a pressure and a type of buffer gas.

6. The apparatus according to claim **5**, wherein the buffer gas is krypton, wherein the pressure is at least approximately 0.1 Torr, and wherein the distance between the radiation source and the proximal end of the filter is 5 cm.

7. The apparatus according to claim **5**, wherein a length of the filter, which is formed by the distance between the proximal end of the filter and its distal end in relation to the radiation source, is selected subject to the pressure of the buffer gas and a form of the filter.

8. The apparatus according to claim **7**, wherein the length of the filter is at least 1 cm.

9. The apparatus according to claim **1**, wherein the number of plates in the filter is adjusted subject to a thickness of each plate and a desired optical transparency of the filter as determined by the formula

$$\frac{d}{d+d_f}\times 100\%$$

in which d=a distance between two plates of the filter at a proximal side of the filter; and d_f=a thickness of a plate of the filter.

10. The apparatus according to claim **9**, wherein the number of plates is adjusted such that the distance between two plates is approximately 1 mm.

11. The apparatus according to claim **1**, wherein a surface of the plates is rough.

12. A filter for suppressing undesired atomic and microscopic particles which are emitted by a radiation source, wherein a plurality of plates are positioned substantially parallel in relation to one another, for trapping atomic and microscopic particles on their respective surfaces, wherein the plates are directed radially from the radiation source.

away

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13. The filter according to claim 12, wherein the plates are positioned in a honeycomb construction.

14. The filter according to claim 12, wherein the plates are positioned such as to be evenly distributed in relation to one another.

15. The filter according to claim 12, wherein the filter is to be disposed in a buffer gas, and wherein a distance between the radiation source and a proximal end of the filter in relation to the radiation source is selected subject to a pressure and a type of the buffer gas.

16. The filter according to claim 15, wherein the buffer gas is krypton, wherein the pressure is at least approximately 0.1 Torr, and wherein the distance between the radiation source and the proximal end of the filter is 5 cm.

17. The filter according to claim 12, wherein a length of the filter, which is the distance between a proximal end of the filter and a distal end of the filter in relation to the radiation source, is selected subject to a pressure of a buffer gas, in which the filter is to be disposed, and a form of the filter.

18. The filter according to claim 17, wherein the length of the filter is at least 1 cm.

19. The filter according to claim 12, wherein the number of plates in the filter, a thickness of a plate in the filter, a distance between two plates in the filter or any combination thereof is based on a desired optical transparency of the filter as determined by the formula:

$$\frac{d}{d+d_f} \times 100\%$$

wherein d is a distance between two plates of the filter at a proximal end of the filter in relation to the radiation source and d_f is a thickness of a plate of the filter.

20. The filter according to claim 19, wherein the distance between two plates in the filter is approximately 1 mm.

21. The filter according to claim 12, wherein a surface of the plates is rough.

22. A filter to suppress undesired atomic and microscopic particles from a radiation source, the filter comprising a plurality of foils or plates having a surface configured to trap atomic and microscopic particles thereon, wherein each foil or plate essentially extends away from the radiation source.

23. The filter according to claim 22, wherein each foil or plate extends essentially radially from the radiation source.

24. The filter according to claim 23, wherein the foils or plates are cone shaped and are positioned concentrically.

25. The filter according to claim 23, wherein a foil or plate of the plurality of foils or plates is positioned substantially orthogonally to another foil or plate of the plurality of foils or plates.

26. The filter according to claim 23, wherein the foils or plates are positioned such as to be evenly distributed in relation to one another.

27. The filter according to claim 22, wherein each foil or plate is positioned substantially parallel in relation to one another.

28. The filter according to claim 22, wherein the foils or plates are positioned in a honeycomb construction.

29. The filter according to claim 22, wherein the filter is to be disposed in a buffer gas, and wherein a distance between the radiation source and a proximal end of the filter in relation to the radiation source is selected subject to a pressure and a type of the buffer gas.

30. The filter according to claim 29, wherein the buffer gas is krypton, wherein the pressure is at least approximately 0.1 Torr, and wherein the distance between the radiation source and the proximal end of the filter is 5 cm.

31. The filter according to claim 22, wherein a length of the filter, which is the distance between a proximal end of the filter and a distal end of the filter in relation to the radiation source, is selected subject to a pressure of a buffer gas, in which the filter is to be disposed, and a form of the filter.

32. The filter according to claim 31, wherein the length of the filter is at least 1 cm.

33. The filter according to claim 22, wherein the number of foils or plates in the filter, a thickness of a foil or plate in the filter, a distance between two foils or plates in the filter or any combination thereof is based on a desired optical transparency of the filter as determined by the formula:

$$\frac{d}{d + d_f} \times 100\%$$

wherein d is a distance between two foils or plates of the filter at a proximal end of the filter in relation to the radiation source and d_f is a thickness of a foil or plate of the filter.

34. The filter according to claim 33, wherein the distance between two foils or plates in the filter is approximately 1 mm.

35. The filter according to claim 22, wherein a surface of the foil or plates is rough.

36. The filter according to claim 22, wherein the filter is configured to allow transmission therethrough of extreme ultraviolet radiation.

37. The filter according to claim 36, wherein the extreme ultraviolet radiation has a wavelength of about 13nm.

38. The filter according to claim 22, wherein the foils or plates comprise copper.

39. The filter according to claim 22, wherein the filter has an optical transparency of at least about 80%.

40. A lithographic apparatus, comprising:

a filter comprising a plurality of foils or plates having a surface configured to trap thereon atomic and microscopic particles from a radiation source, wherein each foil or plate essentially extends away from the radiation source; and

at least one optical element configured to receive radiation from the radiation source via the filter.

41. The apparatus according to claim 40, wherein each foil or plate extends essentially radially from the radiation source.

42. The apparatus according to claim 41, wherein the foils or plates are cone shaped and are positioned concentrically.

43. The apparatus according to claim 41, wherein a foil or plate of the plurality of foils or plates is positioned substantially orthogonally to another foil or plate of the plurality of foils or plates.

44. The apparatus according to claim 41, wherein the foils or plates are positioned such as to be evenly distributed in relation to one another.

45. The apparatus according to claim 40, wherein each foil or plate is positioned substantially parallel in relation to one another.

46. The apparatus according to claim 40, wherein the foils or plates are positioned in a honeycomb construction.

47. The apparatus according to claim 40, wherein the filter is disposed in a buffer gas, and wherein a distance between the radiation source and a proximal end of the filter in relation to the radiation source is selected subject to a pressure and a type of the buffer gas.

48. The apparatus according to claim 47, wherein the buffer gas is krypton, wherein the pressure is at least approximately 0.1 Torr, and wherein the distance between the radiation source and the proximal end of the filter is 5 cm.

49. The apparatus according to claim 40, wherein a length of the filter, which is the distance between a proximal end of the filter and a distal end of the filter in relation to the radiation source, is selected subject to a pressure of a buffer gas, in which the filter is disposed, and a form of the filter.

50. The apparatus according to claim 49, wherein the length of the filter is at least 1 cm.

51. The apparatus according to claim 40, wherein the number of foils or plates in the filter, a thickness of a foil or plate in the filter, a distance between two foils or plates in the filter or any combination thereof is based on a desired optical transparency of the filter as determined by the formula:

$$\frac{d}{d+d_f}\times 100\%$$

wherein d is a distance between two foils or plates of the filter at a proximal end of the filter in relation to the radiation source and d_f is a thickness of a foil or plate of the filter.

52. The apparatus according to claim 51, wherein the distance between two foils or plates of the filter is approximately 1 mm.

53. The apparatus according to claim 40, wherein a surface of the foil or plates is rough.

54. The apparatus according to claim 40, wherein the radiation comprises extreme ultraviolet radiation.

55. The apparatus according to claim 40, wherein a wavelength of the radiation is about 13nm.

56. The apparatus according to claim 55, wherein the wavelength of the radiation is 13.5nm.

57. The apparatus according to claim 40, wherein the at least one optical element comprises a plurality of multi-layer mirrors.

58. The apparatus according to claim 57, wherein at least one of the plurality of multi-layer mirrors comprises alternating molybdenum and silicon layers.

59. The apparatus according to claim 40, comprising the radiation source, the radiation source comprising an extreme ultraviolet radiation plasma source.

60. The apparatus according to claim 40, wherein the filter has an optical transparency of at least about 80%.

61. A radiation source system, comprising:

an extreme ultraviolet radiation plasma source; and

a filter to suppress undesired atomic and microscopic particles comprising a plurality of foils or plates having a surface configured to trap thereon atomic and microscopic particles from the plasma source, wherein each foil or plate essentially extends away from the plasma source.

62. The system according to claim 61, wherein each foil or plate extends essentially radially from the plasma source.

63. The system according to claim 62, wherein the foils or plates are cone shaped and are positioned concentrically.

64. The system according to claim 62, wherein a foil or plate of the plurality of foils or plates is positioned substantially orthogonally to another foil or plate of the plurality of foils or plates.

65. The system according to claim 61, wherein a surface of the foil or plates is rough.

66. The system according to claim 61, wherein a wavelength of the extreme ultraviolet radiation is about 13nm.

67. The system according to claim 66, wherein the wavelength of the radiation is 13.5nm.

68. The system according to claim 61, wherein the filter is positioned between the plasma source and a lithographic apparatus comprising one or more multilayer mirrors.